

Joint Logistics Systems Center



S U C C E S S S T O R Y

Tube Bending Successfully Implemented at WR-ALC



The Global Access to Tube Bending Data Project successfully demonstrated the technology to automatically produce replacement tubing parts for the F-15E aircraft at Warner Robins Air Logistics Center (WR-ALC), Georgia and the 46th Equipment Maintenance Squadron (46 EMS) Eglin Air Force Base (AFB), Florida. The project demonstrated that tube bending digital engineering data can be downloaded directly from the F-15E Tube File Information System (TFIS) and sent to a personal computer linked to a computer numerically controlled (CNC) bending machine that automatically fabricates the required tubing. This process avoids lengthy delays in weapon system repair caused by the unavailability of parts. The Global Access to Tube Bending Data Project is one of nine demonstration projects managed at the Joint Logistics Systems Center (JLSC) by the Automated Systems Demonstration (ASD) Program Management Office, that supports business improvement opportunities and provides solutions to production and operational challenges that affect the logistics mission. The Global Access to Tube Bending Data Project team includes government personnel and contractor personnel from BDM.

Accomplishments

The Global Access to Tube Bending Data demonstrated the ability to store, access, retrieve, and manufacture parts in a totally digital environment. The demonstration produced validated cost savings that represented a return on investment (ROI) at the 46th EMS of 6.8 to 1 and 17.2 to 1 at WR-ALC. The system not only reduces fabrication time, it produces a higher quality product through a computer based quality control system which ensures that the final tube meets exact specifications. This system could potentially save many times the demonstrated amount when it is exported to aircraft other than the F-15E and to other Department of Defense branches. Customer acceptance has been very positive because this demonstration has proven that critical tube runs can be fabricated quickly as they are needed. This will provide the warfighter with critical spare parts (tubes) much quicker than previous methods resulting in increased weapons system availability while reducing inventory holding costs.

Background

In 1994 the Deputy Under Secretary for Defense (Logistics) [DUSD(L)] directed a demonstration of selected automation systems to make the operation of Department of Defense (DoD) depots more cost effective. Although relatively simple to manufacture, replacement tubing parts for weapons systems are procured as a straight tube from the original supplier. The tube bend information is then calculated and either bent by hand or entered into a digitally numerically controlled machine manually. This process resulted in a costly build-up of inventory, higher scrap/rework rates and delays in providing the warfighter with the bent tubes. The Global Access to Tube Bending Data demonstration began in 1995. The demonstration's objective was to show the feasibility of a low cost, on-demand tube fabrication process by storing digital tube bending information and downloading it into a CNC controller. The technician input the part number of the tube to be bent and the proper data was selected from the data base and sent to the CNC tube bender. A software application called MiddleMan provided the connectivity between the TFIS and the Eaton Leonard Laser Vision CNC tube bending equipment located at remote sites. After fabricating the tube, the technician insured it met the required specifications and then installed it in the weapon system. The demonstration resulted in reduced scrap/rework rates, inventory rates, and repair cycle time. The JLSC has made these findings available to DUSD(L) for implementation in other services.